UNITED STATES FORCES KOREA

WINTER SAFETY GUIDE

STOP: TAKE TIME TO PREPARE AND PLAN
FOR AN ACCIDENT-FREE WINTER

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INTRODUCTION

During the winter months, many of us will participate in a variety of outdoor activities. Regardless of which activity we choose (skiing, sledding, camping, snowboarding, etc.), it is important that we take the time to recognize the risks involved in what we do, whether on- or off-duty. This winter safety guide has been written to increase safety awareness in USFK and to help leaders implement their winter safety program. This booklet outlines some universal as well as Korea-unique winter safety hazards, and lists some preventive measures that may help safeguard the well being of soldiers, sailors, airmen, marines, civilians, and family members.

Winter Recreation Hazards

Whether at work or play, a variety of hazards exist during the winter season that increase risks for everyone. Low temperatures increase the potential for cold related injuries. However, by using the risk management process to identify the risks associated with a given activity, appropriate actions can be taken to prevent cold-weather related accidents and ensure an accident-free winter season.

Operational Risk Management (ORM)

ORM is the process of **identifying, assessing, and controlling risks** arising from operations/activities, and making decisions that balance risk costs with the operation/activity benefits. Simply put, it is a common sense approach to incorporating safety into everything we do. If the risks of what you plan to do outweigh the benefits, then you should find another way to do it or reassess the need to do it at all.

Operational risk management is a systematic, five-step process that can be applied to any situation, program or environment. Note: Some organizations use a six-step process. Keep in mind that the only difference is that they have taken step 3 and broken it into two steps in their programs.

Operational Risk Management Process

Five-step ORM Process

Step 1. Identify the hazards--recognize potential sources of danger associated with a task or mission.

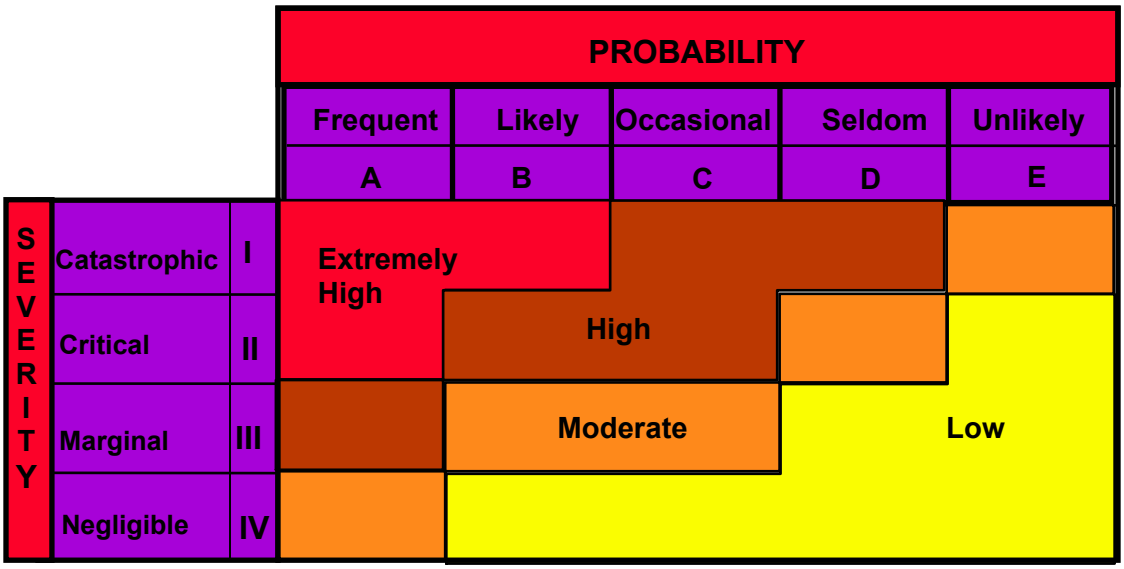
Step 2. Assess the hazards--determine the impact of each hazard in terms of potential loss and cost, based on probability and severity.

Step 3. Develop Controls and Make a risk decision—choose control measures that eliminate or reduce risk to an acceptable level. Control measures should ensure that risks are reduced to a level where benefits outweigh potential cost.

Step 4. Implement controls--put controls in place that eliminate hazards or reduce risks.

Step 5. Supervise--ensure that everyone knows, performs to, and enforces standards and controls. Evaluate the effectiveness of controls and adjust/update as necessary.

RISK ASSESSMENT MATRIX



PROBABILITY: The likelihood that an event will occur.

- **Frequent:** Occurs often, continuously experienced.
- **Likely:** Occurs several times.
- **Occasional:** Occurs sporadically.
- **Seldom:** Unlikely, but could occur at some time.
- **Unlikely:** Can assume it will not occur.

SEVERITY: The degree of injury, property damage, or other mission-impairing factor.

- **Catastrophic:** Death or permanent total disability, system loss, major property damage.
- **Critical:** Permanent partial disability, temporary total disability in excess of three months, major system damage, significant property damage.
- **Marginal:** Minor injury, lost-workday accident, minor system damage, and minor property damage.
- **Negligible:** First-aid or minor medical treatment, minor system impairment.

RISK LEVEL

- **Extremely high:** Loss of ability to accomplish mission.
- **High:** Significantly degrades mission capabilities in terms of required mission standard.

• **Moderate:** Degrades mission capabilities in terms of required mission standards.

• **Low:** Little or no impact on accomplishment of mission.

Six-Step ORM Process

Cold injuries plague any unit that is improperly equipped or improperly prepared for cold weather operations. The equipment you need to prevent cold weather injuries is in your organizational inventory and should be used. **Preparation for cold weather operations involves advance planning by leaders, individual compliance, and supervisory follow-through.**

Commanders/leaders must be aware that if a service member complains of being unusually cold, there could be a cold weather injury in progress. Ignoring this symptom could result in eventually losing a service member from the mission. Inspections and constant follow-ups are extremely important if continued exposure to cold weather cannot be avoided. No one should go unwatched for any long period of time. Early detection of cold weather injuries is the only way to save fingers and toes and keep a service member mission ready.

The winter months are serious business -- with many hidden dangers/hazards. The information included in this guide describes the causes and symptoms of these dangers/hazards. It describes how to prevent and/or treat injuries if they occur. Proper use and care of cold weather gear is also covered. Knowing how to care for and wear your cold weather uniform will go a long way toward preventing cold weather injuries. Protect yourself by being prepared and aware.

Road and weather conditions make travel extremely hazardous during the winter months. Listening to your local television and radio stations can be extremely helpful. Current weather information, road conditions, travel advisories, cancellation of social and business functions, and school closings/delays are available through the media.

DOD has a mandatory seat belt law that is especially important in the winter. Your seat belt will keep you in your seat and assist you in maintaining and/or regaining control of your vehicle. If your vehicle goes off the road, your seat belt will keep you in place and prevent you from possibly sustaining a serious injury.

Remember -- winter hazards can be found all around you. Some are obvious, and some are hidden. It is up to you to know the warning signs and heed to them.

COLD WEATHER, A SILENT ENEMY

Silent death and injury lurk during cold weather operations. The history and lessons of weather and war are enduring. Military organizations have suffered as much damage from cold weather as from the enemy. One classic example is the retreat of Napoleon's forces from Russia during 1812 –13. Pursued by a relentless enemy, surrounded by the hostile cold weather, staggering onward without food, water, rest, adequate clothing or footwear, thousands of troops suffered from frostbite or froze to death.

Another example is the suffering of our Revolutionary soldiers at Valley Forge during 1777-78. Only two-thirds of the soldiers of the Continentals who began their winter at Valley Forge remained in the ranks when the spring came. Of those left, half were unfit for duty.

In the Civil War and World War I, soldier losses to cold weather injury were low due to the winter months quartering practices. However, the forces fought the winter campaigns hard in World War II and troop losses to cold weather injuries were high. Trench foot and frostbite seriously weakened the fighting strength of the U.S. divisions.

Among U.S. Army and Army Air Force troops, there were over 90,000 cold injuries requiring medical treatment during World War II, and another 10,000 during the Korean War, accounting for 10% of all casualties experienced during these conflicts. During the War in Korea, cold weather injuries struck as decisively as the Chinese Army.

Given that the average air temperature recorded when cold injuries were experienced during World War II was 30^{o}F, and that temperatures this low are experienced over about 60% of the earth's surface, leaders must appreciate cold-weather effects on their personnel's health and performance. **Prevention of cold injuries is the responsibility of commanders at all levels.**

Cold weather continues to be a hostile environment for military activities but cold weather injuries are unnecessary. With a little advance knowledge and preparation, cold weather injuries such as hypothermia, frostbite, trench foot, dehydration, and carbon monoxide poisoning can be avoided during cold weather exercises.

Every one is essential for success in the battles of the next war. We cannot afford to allow cold weather injuries or winter accidents to sap our strength. Strong leadership and intense training are required to maintain a high state of readiness in winter warfare techniques. **Be prepared to Fight and Win in the winter!**

Key Points During Cold-Weather Operations

1. **Shelter** from the elements is secondary only to defending against enemy actions.
2. **Eat and drink** more food and water than normal.
3. **Be prepared** for sudden weather changes.
4. Avoid cold injuries by using a **buddy system and frequent self-checks**, especially when individuals are not active, or their duties require them to remove their gloves.
5. **Immediately treat persons showing any sign/symptom of cold injury.**
6. **Sick, injured, and wounded individuals are very susceptible to cold injuries**.
7. Each troop should **carry an individual cold-weather survival kit** at all times.
8. Drivers and passengers should **always have a sleeping bag and extra cold-weather clothing when traveling by vehicle** away from the unit bivouac location.

9. Establish a buddy system within the unit to increase unit cohesiveness by minimizing the sense of isolation that individuals may experience during cold weather. A buddy system will also help to monitor for signs of cold injury among unit members.

"Prevention of cold injuries is the responsibility of commanders at all levels."

PLAN FOR THE COLD

- Use your Medical Practitioners and Occupational Health personnel to train individuals and their leaders in Preventive Medicine Measures (PMM) against cold.
- Obtain weather forecast for time/area of training/mission.
- Ensure the following are available as the operating conditions permits:
  - Covered vehicles for personnel transport, if operating conditions permits.
  - Cold weather clothing.
  - Warming tents/areas.
  - Hot rations/hot beverages.
  - Drinking water.
- Inspect service members (before starting training/mission) to ensure-
  - Availability, proper fit, and wear of cold weather gear.
  - Clean, dry, proper-fitting clothing.
  - Each service member has several pairs of socks, depending on the nature and duration of the mission.
- Frequently rotate guards or other service members performing inactive duties.
- Ensure medical support is available for treatment should cold weather injuries occur.

WIND CHILL FACTORS. Contrary to what some believe, the wind chill factor does not lower the air temperature. It does not matter how strong the wind is; the temperature remains constant unless progressively colder air is moving into the region. The wind chill factor is a measure of how fast heat is being removed from your body. If the air temperature is 40 degrees and the wind is blowing at 20 miles per hour, it feels the same as 18 degrees with no wind at all.

The human body is continually producing and losing heat. Winds increase the heat loss in your body by reducing the thin layer of warm air next to the skin. Whenever a breeze is blowing, or a person is walking or riding, they expose themselves to the air, and the wind chill factor is evidenced.

When the air temperature is below freezing (32 degrees Fahrenheit) and the wind takes away heat from the body faster than the body can produce it, frostbite can occur. Temperatures of -20 degrees Fahrenheit will freeze exposed body tissue regardless of the wind speed. The lower the temperature, the greater the danger of cold weather injuries. The combined effect of wind speed and the air temperature is expressed as an equivalent temperature.

Water can conduct heat away from the body much faster than air of the same temperature.

a. When clothing becomes wet due to snow, rain, splashing water, or accumulated sweat, the body's loss of heat accelerates. For example, when air temperature is 40°F, heat loss in wet clothing is double what it is in dry clothing.

b. Swimmers and persons working or wading in water can lose a great deal of body heat even when water temperatures are only mildly cool. Individuals working in cold water should be closely watched while they enter the water. Sudden plunging into cold water can produce irregular heartbeats, gasping, and hyperventilation, which could cause inhalation of water, heart failure, and drowning.

Wind-chill temperatures obtained from weather reports do not take into account man-made wind. Man-made winds worsen the wind-chill effect of natural wind. Individuals riding in open vehicles or exposed to jet blast/propeller/rotor-generated wind can be subject to dangerous wind chill, even when natural winds are low.

When assessing weather conditions for troops operating in mountainous regions or for flight personnel in aircraft, altitude may need to be considered, if weather measurements are obtained from stations at low elevations. Temperatures, wind chills and the risk of cold injury at high altitudes can differ considerably from those at low elevations.

- In general, it can be assumed that air temperature is 3.6° F lower with every 1000 feet above the site at which temperature was measured.
- Winds are usually more severe at high altitude, and there is less cover above the tree line.
- The wind chill index gives the equivalent temperature of the cooling power of wind on exposed flesh. - Any movement of air has the same effect as wind (running, riding in open vehicles, helicopter downwash or jet blast)
- Trench foot injuries can occur at any point on the wind chill chart and--

- Are much more likely to occur than frostbite at "LITTLE DANGER" wind chill temperatures, especially on extended exercises/missions and /or in wet environments.
- Can lead to permanent disability, just like frostbite.

DETERMINE AND USE WIND CHILL FACTOR

- Obtain temperature and wind speed information as directed by your unit's SOP or contact the local supporting Preventive Medicine detachment or weather section.

This chart represents the New Wind Chart that the National Weather Service implemented for the winter season.

Temperature in degrees Fahrenheit	Wind Speed MPH												
	Calm	5	10	15	20	25	30	35	40	45	50	55	60
	40	36	34	32	30	29	28	28	27	26	26	25	25
	35	31	27	25	24	23	22	21	20	19	19	18	17
	30	25	21	19	17	11	15	14	13	12	12	11	10
	25	19	15	13	11	9	8	7	6	5	4	4	3
	20	13	9	6	4	3	1	0	-1	-2	-3	-3	-4
	15	7	3	0	-2	-4	-5	-7	-8	-9	-10	-11	-11
	10	1	-4	-7	-9	-11	-12	-14	-15	-16	-17	-18	--19
	5	-5	-10	-13	-15	-17	-19	-21	-22	-23	-24	-25	-26
	0	-11	-16	-19	-22	-24	-26	-27	-29	-30	-31	-32	-33
	-5	-16	-22	-26	-29	-31	-33	-34	-36	-37	-38	-39	-40
	-10	-22	-28	-32	-35	-37	-39	-41	-43	-44	-45	-46	-48
	-15	-28	-35	-39	-42	-44	-46	-48	-50	-51	-52	-54	-55
	-20	-34	-41	-45	-48	-51	-53	-55	-57	-58	-60	-61	-62
	-25	-40	-47	-51	-55	-58	-60	-62	-64	-65	-67	-68	-69
	-30	-46	-53	-58	-61	-64	-67	-69	-71	-72	-74	-75	-76
	-35	-52	-59	-64	-68	-71	-73	-76	-78	-79	-81	-82	-84
	-40	-57	-66	-71	-74	-78	-80	-82	-84	-86	-88	-89	-91
	-45	-63	-72	-77	-81	-84	-87	-89	-91	-93	-95	-97	-98

To calculate the wind chill index for combinations of temperature and wind other than those given in the table above, you can use the formula:

$$\text{Wind chill } (^{o}F) = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where V = Wind speed in miles per hour and T is the air temperature in degrees Fahrenheit

This represents the old wind chill chart as used in the United States through the winter of 2000-2001.

Old Wind Chill Chart

Wind Speed	Cooling Power of Wind Expressed as "Equivalent Chill Temperature"											
MPH	Temperature (degrees F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
Equivalent Chill Temperature												
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	-3	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	15	0	-15	-29	-44	-59	-74	-89	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	-11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-22	-37	-53	-69	-85	-101	-117	-132	-148
	LITTLE DANGER (In less than 5 hrs with dry skin. Greatest hazard from false sense of security				INCREASING DANGER (Exposed flesh may freeze within 1 minute.)			GREAT DANGER (Exposed flesh may freeze within 30 seconds.)				

To determine the wind chill temperature, enter the chart at the row corresponding to the windspeed and read right until reaching the column corresponding to the actual air temperature.

(Note: Winds above 40 mph have little additional effect)

To calculate the wind chill index for combinations of temperature and wind other than those given in the table above, you can use the formula:

$$\text{Wind chill } (^{o}F) = 0.0817(3.71 * V^{0.5} + 5.81 - 0.25V) * (T-91.4) + 91.4$$

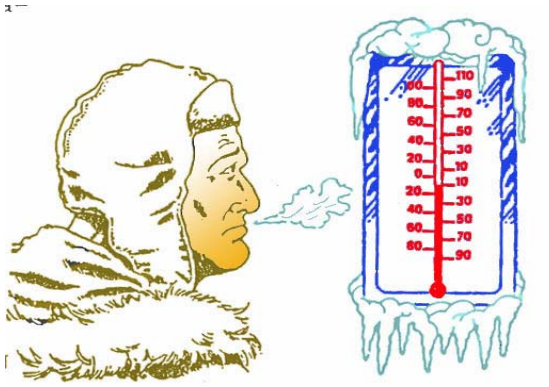
Where V=Wind speed in miles per hour and T is the air temperature in degrees Fahrenheit.

REMEMBER! Cold weather injuries result from prolonged exposure to cold weather. The wind is a big factor in cold weather injuries. Body heat is lost by reducing the thin layer of warm air next to the skin, which causes cold weather injuries. The loss of body heat increases as wind speed increases.

Wind chill categories based on old wind chill chart

WORK INTENSITY	LITTLE DANGER	INCREASED	GREAT DANGER
High Digging foxhole, running, marching with rucksack, making or breaking bivouac	Increased surveillance by small unit leaders, black gloves optional – Mandatory below 00°F; increased hydration	ECWCS or equivalent; mittens with liners; no facial camouflage; exposed skin covered and kept dry; rest in warm, sheltered area; vapor barrier boots below 0°F	Postpone non-essential training; essential tasks only with <15 minute exposure; work groups of no less than 2; cover all exposed skin
Low Walking, marching without rucksack, drill and ceremony	Increased surveillance; cover exposed flesh when possible; mittens with liner and no facial camouflage below 10°F. Full head cover below 0°F. Keep skin dry --especially around nose and mouth.	Restrict non-essential training; 30-40 minute work cycles with frequent supervisory surveillance for essential tasks. See above.	Cancel Outdoor Training
Sedentary Sentry duty, eating, resting, sleeping, clerical work	See above; full head cover and no facial camouflage below 10°F; cold weather boots (VB) below 0°F; shorten duty cycles; provide warming facilities	See above; full head cover and no facial camouflage below 10°F; cold weather boots (VB) below 0°F; shorten duty cycles; provide warming facilities	Cancel Outdoor Training

These guidelines are generalized for worldwide use. Commanders of units with extensive extreme cold weather training and specialized equipment may opt to use less conservative guidelines.



PREVENTIVE MEDICINE MEASURES

WIND CHILL	PREVENTIVE MEDICINE MEASURES
30^{O} F AND BELOW	ALERT PERSONNEL TO THE POTENTIAL TO COLD INJURIES.
25^{O} F AND BELOW	LEADERS INSPECT PERSONNEL FOR WEAR OF COLD WEATHER CLOTHING. PROVIDE WARM-UP TENTS/AREAS/HOT BEVERAGES.
0^{O} F AND BELOW	LEADERS INSPECT PERSONNEL FOR COLD INJURIES; INCREASE THE FREQUENCY OF GUARD ROTATION TO WARMING AREAS. DISCOURAGE SMOKING.
-10^{O} F AND BELOW	INITIATE THE BUDDY SYSTEM-HAVE PERSONNEL CHECK EACH OTHER FOR COLD INJURES.
-20^{O} F AND BELOW	MODIFY OR CURTAIL ALL BUT MISSION-ESSENTIAL FIELD OPERATIONS.

PROTECT YOUR BODY!

Humans protect themselves from cold primarily by avoiding or reducing cold exposure using clothing and shelter. When this protection proves inadequate, the body has biological defense mechanisms to help maintain correct body temperature. The body's internal mechanisms to defend its temperature during cold exposure include vasoconstriction and shivering. When these responses are triggered, it is a signal that clothing and shelter are inadequate.

a. Vasoconstriction is the tightening of blood vessels in the skin when it is exposed to cold. The reduced skin blood flow conserves body heat, but, as described earlier, can lead to discomfort, numbness, loss of dexterity in hands and fingers, and eventually cold injuries.

b. Shivering increases internal heat production, which helps to offset the heat being lost. Internal heat production is also increased by physical activity, and the more vigorous the activity, the greater the heat production. In fact, heat production during intense exercise or strenuous work is usually sufficient to completely compensate for heat loss, even when it is extremely cold. However, high intensity exercise and hard physical work are fatiguing, can cause sweating, and cannot be sustained indefinitely. Moreover, most military occupational activities are less vigorous than high-intensity exercise, so internal heat production will probably not be adequate to offset heat loss.

c. Susceptibility to cold injuries can be minimized by maintaining proper hydration and nutrition, avoiding alcohol, caffeine, and nicotine, minimizing periods of inactivity in cold conditions. Minimize the risk of cold injuries in fighting positions, sentry points and observation points by placing pads, sleeping bags, tree boughs, etc inside these positions to allow occupants to insulate themselves

from the ground or snow. High levels of physical fitness are also beneficial for troops participating in cold-weather operations.

Humans do not acclimatize to cold -weather nearly as well as they can acclimatize to hot weather, although repeated cold exposure does produce what is referred to as habituation. Proper training before deploying into cold -weather regions is more important for prevention of cold injuries than repeatedly being exposed to cold temperatures.

a. Following habituation, shivering is much less vigorous. This is advantageous because shivering is inefficient and most of the heat produced is lost. Shivering can also interfere with sleep, causing fatigue.

b. With habituation to repeated cold exposure, humans adjust mentally and emotionally. Training outdoors in cold -weather before deployment will help build confidence in service members' abilities to physically, mentally, and emotionally contend with the stress of cold -weather conditions.

A good memory device for the use and care of your uniform is the word "**COLDER**."

C Keep clothing **C**lean.
O Avoid **O**verheating.
L Wear clothing **L**oose and in layers.
D Keep clothing as **D**ry as possible.
E **E**xamine it for holes, tears, and broken fasteners.
R **R**epair or replace damaged clothing

And always follow the instruction labels in your clothing.

A standard number of clothing layers cannot be prescribed for universal wear, but the following principles are recommended to protect against injuries:

a. Wear enough layers of clothing to allow flexibility for local weather changes. Several layers of medium-weight clothing should provide more insulation than one piece of heavy clothing. Layers of clothing traps air between the clothes, and this is what adds to the insulation's effectiveness.

b. Wear clothing loosely so that the blood circulation is not restricted. Therefore, as your body heats up during physical activities, you can remove the excess layers of clothing.

c. Keep clothing clean; dirt and grease clog the air spaces and reduce insulation. Repair torn clothing and avoid wearing wet clothes that prevent the loss of insulation.

d. Wear clothing and footgear loosely to allow good blood circulation, and to provide the necessary ventilation for insulation of your clothing.

e. Protect your hands with mittens or gloves. Mittens are more protective than gloves. Do not touch metal or other cold objects with your bare hands.

WEAR UNIFORM PROPERLY

- Wear the clothing your commander and leaders direct.
- Wear clothing in loose layers (top and bottom).
- Keep clothing clean and dry. Remove or loosen excess clothing when working or in heated areas to prevent sweating.
- Wear headgear to prevent body heat loss. The body loses large amounts of heat through the head.
- Avoid spilling fuel or other liquids on clothing or skin. Evaporating liquids increase heat loss and cool the skin. Also, liquid stains on clothing will reduce the clothing's protective effects.
- Change wet/damp clothes as soon as possible. Wet/damp clothing pulls heat from body.

KEEP YOUR BODY WARM

- Keep moving, if possible.
- Exercise your big muscles (arms, shoulders, trunk, and legs) frequently to keep warm.
- If you must remain in a small area, exercise your toes, feet, fingers, and hands.
- Avoid the use of alcohol as it makes your body lose heat faster.
- Avoid standing directly on cold, wet ground, when possible.
- Avoid tobacco products. The use of tobacco products decreases blood flow to your skin.
- Eat all meals to maintain energy.
- Drink plenty of water and/or warm nonalcoholic fluids. Dark yellow urine means you are not drinking enough fluids! You can dehydrate in cold climates too!
- Buddies should monitor each other for cold weather injury.
- The wind chill index gives the equivalent temperature of the cooling power of wind on exposed flesh.
  - Any movement of air has the same effect as wind (running, riding in open vehicles, helicopter downwash, prop wash, or jet blast).
  - Any dry clothing (mittens, scarves, masks) or materials, which reduces wind exposure, will help protect the covered skin.
- Trench foot injuries can occur at any point on the wind chill chart and--
  - Are much more likely to occur than frostbite at "LITTLE DANGER" wind chill temperatures, especially on extended exercises/missions and/or in wet environments.
  - Can lead to permanent disability, just like frostbite.

IDENTIFY SPECIAL CONSIDERATIONS

- Conditions that place service members at high risk of cold injuries include--
  - Previous trench foot or frostbite.
  - Fatigue.
  - Use of alcohol.
  - Significant injuries.
  - Poor nutrition.
  - Use of medications that cause drowsiness.
  - Little previous experience in cold weather.
  - Immobilized or subject to greatly reduced activity.
  - Service members wearing wet clothing.
  - Sleep deprivation.
- Identify the special hazards of carbon monoxide poisoning and fire that may affect your cold weather operations.

ENFORCE INDIVIDUAL PREVENTIVE MEDICINE MEASURES

- Ensure service members wear clean and dry uniforms in loose layers.
- Ensure service members remove outer layer(s) before starting hard work or when in heated areas (before sweating).
- Have service members inspect their socks feet at least daily when operating in cold and/or wet environments.
- Ensure service members --
  - Wash their feet daily.
  - Wear clean and dry socks.
  - Use warming areas when available.
  - **Eat all meals to ensure sufficient calories are consumed to maintain body heat.**
  - Drink plenty of water and/or nonalcoholic fluids. Fluid intake is often neglected, leading to dehydration.
  - Exercise their big muscles or at least their toes, feet, fingers, and hands to keep warm.
- Institute the buddy system in cold weather operations. Service members taking care of each other decrease cold injuries.

PROTECT YOUR FEET!

Be aware of proper footwear and care. Your feet are the hardest parts of your body to keep warm and dry under cold weather conditions. Protect them! Insulated boots or cold weather packs with felt liners offer the best protection.

When you are active, your feet sweat. Because of the waterproof rubber lining in most boots, the moisture remains either in your socks or the bottom of the boot. Even if your feet are damp, they will stay warm because the body heat is trapped inside the insulated boots.

If you wear your boots for a long period, you may notice that your feet have become white and wrinkled. There is no reason to be alarmed. This effect will disappear if you dry and warm your feet and put on dry socks.

Avoid prolonged exposure of your feet to cold weather. Personnel are protected with insulated rubber combat boots and socks, but still sustain cold weather injuries to their feet. When the foot is perspiring or being inactive while exposed to the cold weather this usually causes feet injuries.

Feet should be washed, dried and dusted with a dry, antifungal powder (NSN 6505-01-008-3045) daily. Change socks whenever they become wet from exposure to rain, snow, or from sweat. This may require changing into dry socks at least 2-3 times daily. Extra socks can be air-dried and the carried under BDU's to warm.

REMEMBER -- neither the insulated boot nor any other boot will keep your feet from becoming cold or freezing if you remain motionless and inactive for long periods. **The key is ACTIVITY**. Exercises such as knee bends, stamping your feet, running in place or wriggling your toes will help keep your feet warm. Also, elevate your feet whenever possible to aid in the circulation of the blood.

Caring for your boots. The insulation in your boots must be kept dry if they are to protect your feet. Inspect them often and repair any holes or punctures, inside or outside of the boot immediately. Patching the hole with any kind of tape can make temporary repairs. Chewing gum makes a good temporary patch. You should seal any holes as quickly as possible to prevent the insulation from becoming wet.
The arctic overshoes can be worn over your leather boots in wet or muddy terrains. However, overshoes are neither as warm nor as dry as the insulated boots.

PROTECT YOUR HANDS!

There are two kinds of hand wear for use in wet cold weather conditions -- the black leather gloves with wool inserts and the trigger finger mitten with wool mitten inserts.

Use the black leather gloves when you have to use your fingers. Use them alone in milder weather or put the wool inserts in for colder temperatures. The inserts are interchangeable and can be worn on either hand. NEVER wear the inserts alone. Inserts should be changed when they become damp. The inserts should be washed in lukewarm soapy water and squeezed rather than rubbed or scrubbed. All soap must be rinsed out.

In both wet and dry cold weather conditions, wear the trigger finger mittens with the wool inserts. The mittens and the gloves inserts are cared for in the same manner as stated above. If the mittens get wet, dry them slowly – away from extreme heat. Should the leather become stiff, work it gently with your fingers until the leather softens.

You should avoid prolonged exposure of your bare hands and wrists, which could results in stiffening and reduced circulation in the hands. Such exposure requires a length of time to recondition the hands for normal use.

Keep your hands covered. When they get cold, place them inside your clothing under your armpits, next to your stomach or in your crotch to warm them. Major blood vessels run over the back of your hands. If you warm the back of your hands first, you can warm your hands much quicker. You can also warm your hands by clenching and unclenching them in your mittens or by swinging your arms from your shoulders in a circle. A short run (especially in deep snow) usually warms the body enough to restore circulation to the hands.

NEVER place your hands or your bare flesh on metal in extreme cold weather. Do not touch metal, snow or other cold objects with your bare hands. **Touching metal can give you a cold weather burn** (immediate freezing of the flesh that came in contact with the cold-soaked metal) as bad as if you had placed your hand on a hot stove. Snow getting into your glove and not being removed immediately can cause injuries.

Do not wear gloves or mittens that are too tight and restrict your circulation. Tight-fitting sleeves (especially under the armpits) will restrict circulation and cause your hands to become numb and stiff.

PROTECT YOUR FACE AND EARS

- Cover your f ace and ears with a scarf or other materials, if available.
- Wear your insulated cap with flaps down or wear a balaclava and secure under your chin.
- Warm your face and ears by covering them with your hands. **Do not rub face** and
. ears.
- Do not use face camouflage when wind chill is -10 degrees Fahrenheit or below; prevents detection of cold weather injury (frostbite).

NOTE: Rubbing cold extremities can be potentially harmful. Frostbitten areas that are rubbed can cause additional injury to the affected areas.

COLD WEATHER INJURIES AND TREATMENTS

CHILBLAIN

Chilblain is a nonfreezing cold injury which, while painful, causes little or no permanent impairment. It appears as red, swollen skin, which is tender, hot to the touch, and may itch. This can worsen to an aching, prickly ("pins and needles") sensation, and then numbness. It can develop in only a few hours in skin exposed to cold.

TREATMENT

Prevent further exposure. Remove wet and/or constrictive clothing. Wash and dry injury gently. Elevate, cover with layers of loose warm clothing and allow to rewarm. (Pain and blister may develop). **Do not** pop blister, apply lotions or creams, massage, expose to extreme heat, or allow victim to walk on injury. Refer for medical treatment.

FROSTBITE

Frostbite is the freezing of any part of the body exposed to temperatures of 32 degrees Fahrenheit or below. The first symptom is usually an uncomfortable aching sensation, tingling, or stinging. If the condition is allowed to continue, numbness sets in. On Caucasian skin it will initially turn red and later becomes pale gray or waxy white.

The effects of frostbite range in severity from first degree, the least serious, to fourth degree, the most severe case. In simple Frostbite, the skin becomes spotted, bluish or red, and hot and dry after re-warming. Often there is intense itching or burning and later a deep-seated ache. Within a few hours there may be swelling, which may remain for several days. Then the skin begins to peel off and may continue to do so for as long as a month.

In more serious cases of frostbite, clear blisters may appear a few hours after re-warming. When they dry, dark scabs form, which eventually separate and reveal open sores. Healing may take several months. The most severe cases of frostbite involve complete gangrene and loss of body tissue and bone. Sometimes amputation of the affected part is necessary.

(Example of serious frostbite injury.)

TREATMENT. Frostbite injuries attack in two stages, superficial and deep. Treatment depends on the degree of frostbite injury. You can decide how severe the frostbite has become by finding out how long the body part has been without feeling. If the time is very short, the frostbite is probably superficial. Otherwise, you should assume the injury is deep, and therefore serious.

In cases of superficial frostbite, warm the affected area by going indoors where it's warm. If you can't do that, cover your cheeks, nose, or ears with your warm hands until the pain returns. Then place your frostbitten hands under your armpits, next to your bare skin. Don't re-warm the frostbitten areas with massages, or exposure to open fires, exhaust pipes, cold water soaks, or by rubbing with snow. Be prepared for pain when the area thaws out.

In cases of deep frostbite, don't attempt to treat the frostbite in the field. Get to a hospital or aid station as quickly as possible. If transportation is available, don't walk. Protect the frozen part(s) from further injury, but don't try to thaw it by rubbing, bending, or massaging. Don't soak the frozen body part(s) in either cold or warm water. Don't rub with snow. Don't expose the body part(s) to hot air, engine exhaust, or open fires. Don't use ointments or salves.

Thawing out in the field increases pain, and may lead to infection and could cause greater damage and gangrene. If the feet are deeply frostbitten, there is less danger involved in walking on the feet while they are frozen than there is in walking on them after they have thawed out. Although thawing out the frozen part is not recommended, the rest of the body should be kept warm.

PREVENTION. It's a lot easier to prevent frostbite, or to stop it in its early stages, than to thaw out and care for the badly frozen flesh. Wear sufficient clothing. Avoid wearing clothing that interferes with your circulation. Tight fitting shoes, socks, and hand wear are especially dangerous. Keep dry, and avoid becoming wet from perspiration.

Exercise your face, fingers, and toes to keep them warm. Use the buddy system. You should always travel with a buddy in extreme cold weather. That way each person can watch for white spots, which is one of the first signs of frostbite, on the face and neck. Numbness is also a sign that frostbite has occurred. You can apply first aid to mild frostbite. However, you should not try to treat frostbite in the field. **GET MEDICAL AID as soon as possible.**

TRENCH FOOT

Trench foot is just as nasty as it sounds. It's a cold weather injury resulting from exposure to a cold, damp environment. It is caused by prolonged standing in water, insufficient clothing, and having wet socks and boots for hours while the temperature is just above freezing. The injury normally occurs when temperatures range between 32 and 50 degrees Fahrenheit.

In the early stages of trench foot, the feet and toes are pale, numb and stiff. Walking becomes difficult. In later stages, the feet and toes become red, swollen, and warm. In cases of extreme injury, the body flesh dies, and amputation may become necessary.

Prevention is important because the feet are more vulnerable to cold weather than other parts of the body. Cold weather attacks feet most often because they get wet easily (both externally and internally from perspiration) and because circulation is easily

restricted. **Footgear is therefore one of the most important parts of cold weather clothing.**

The rule of wearing clothing loose and in layers also applies to footgear. The layers in boots are made up by the boot itself and by the socks. If blood circulation is restricted, the feet will be cold. Socks, worn too tightly, might easily lead to freezing of the feet. For the same reasons, avoid lacing your footgear tightly.


(Severe trench foot)

TREATMENT. Whenever your feet get wet, dry them as soon as possible and put on a dry pair of socks. Also wipe the inside of your boots as dry as possible. Exercise your feet. Stamping your feet, double-timing a few steps back and forth, and flexing and wiggling your toes inside your boots. These exercises require muscular action, which produce heat, and will help keep your feet warm. Massage your feet when you change your socks.

If you do develop trench foot, handle your feet very gently. Do not rub or massage them. Wash them carefully with a *mild* soap and water. Dry and elevate your feet. Leave them uncovered and at room temperature. Do not walk on your injured feet. Seek medical attention.

Remember, trench foot is a cold weather injury that can disable you. Keep your feet healthy during winter operations by preventing a cold weather injury.

HYPOTHERMIA

Another non-freezing injury is hypothermia. It is an abnormally low body temperature. Hypothermia is not always associated with cold weather but it can occur when you get wet. A plunge in cold water or a sudden drenching rain can bring it on. It can be fatal and is called "death from exposure."

Hypothermia stalks its victim in 30 to 50 degree weather. It is the number one killer of outdoor recreationists and could be a major killer of troops involved in winter training. Hypothermia is a threat in cold-weather operations. Many leaders and troops who are quick to recognize symptoms of frostbite may not know as much about hypothermia.

Hypothermia is a condition involving the rapid, progressive mental and physical collapse that accompanies chilling of the vital body organs. It is caused by exposure to any combination of cold, wetness and wind, and is aggravated by exhaustion.

TREATMENT. The treatment of hypothermia consists of reducing the heat loss from the victim's body, and adding heat to the victim's system. Sometimes the conscious, shivering victim is only mildly hypothermic and can be helped immediately when removed from the chilling environment. **Do the following to re-warm the mildly hypothermic victim:**

- Remove him/her from the cold environment and if possible, get them to a sheltered area.
- Replace the victim's wet clothes with warm dry ones.
- Apply moderate heat to the whole body (from a room heater or if possible, a warm shower).
- Cover him/her with blankets and other warming and insulating materials. Or put the victim in a pre-warmed sleeping bag, along with canteens of heated water or with another person.
- Give the victim hot, nonalcoholic drinks, and avoid caffeine items, which narrows the blood vessels.

PREVENTION. Do you want to outsmart the killer? If you do, take action during the period of exposure and gradual exhaustion. Don't run the risk of hypothermia. Take steps to prevent overexposure.

Here's how:

a. **STAY DRY**. Wet clothes lose 90 percent of their insulating value. Choose rain clothes that have proven effective against wind-driven rain. Cover your head, neck, body, and legs.

b. **BEWARE OF THE WIND**. A slight breeze carries heat away from bare skin much faster than still air. Wind drives cold air under and through clothing. Wind refrigerates wet clothes by evaporating moisture from the surface. Wearing two-piece woolen underwear, or long wool pants and sweater or shirt, and a knit cap to protect neck and chin are the best type of clothing in hypothermia weather.

c. **UNDERSTAND COLD WEATHER**. Most hypothermia cases develop in air temperatures between 30 and 50 degrees. Many people underestimate the danger of being wet in such temperatures -- with fatal results. The cold that kills is cold water running down neck and legs, cold water held against the body by sopping wet clothes and cold water flushing body heat from the surface of the clothes. Don't ask, "How cold is the air?" Instead ask, "How cold is the water against your body?"

d. **END EXPOSURE**. If you can't stay dry and warm under existing weather conditions, get out of the wind and rain. Build a fire. A storm proof tent gives the best shelter. Never ignore shivering. Persistent or violent shivering is a clear warning that you are on the verge of hypothermia.

e. **AVOID EXHAUSTION**. Make camp before you get tired. Remember, exposure greatly reduces your normal endurance.

f. **USE THE BUDDY SYSTEM.** Don't go out alone. Members of squads and patrols should watch each other for the warning signs of hypothermia and take actions as needed. Take heed of "hypothermia weather." Choose equipment with hypothermia in mind. Watch carefully for warning symptoms. *Leaders* should watch their people for these symptoms:

- Uncontrollable fits of body shivering.
- Slurred or vague, slow speech.
- Incoherence, lapses in memory.
- Immobile, fumbling hands.
- Frequent stumbling or lurching gait.
- Drowsiness.
- Apparent exhaustion, inability to sit up after a rest.

DEHYDRATION.
The loss of water from the body occurs in cold weather as well as in hot climates. Personnel bundled up in many layers of clothing cannot feel perspiration forming as their clothes readily absorbs the perspiration. However, the loss of liquids and salt does occur. The difficulty in obtaining water in the winter months often is given as a reason for omitting consumption of water. Dehydration will decrease an individual's effectiveness and lead to fatigue. Always drink plenty of water during winter activities/operations.

FIRST AID FACTORS FOR FROZEN BODY TISSUE

- Do not let personnel continue with their usual duties/activities until a doctor can determine severity.

- No smoking or alcohol (affects blood flow adversely).
  No ointments or salves. Do not open blisters.

- Lower extremity damage, treat as litter case. If victim must walk, do not thaw feet.
  Help victim get to medical aid.

- Thaw frozen tissue as rapidly as possible in bath water with controlled temperature of 104 degrees Fahrenheit. No more than 109 degrees Fahrenheit.

- Do not rush thawing with hot, quick heat.

- If you cannot use water, warm with skin-to-skin contact with another part of the body.

- Do not put personnel in warm bath water if already thawing from room heat, and do not keep body in the water beyond the thaw.

- Clothing should be carefully removed from area injured. Cover the injury with a blanket or loose clothing.

First aid should be performed at the scene or on the way to the medical facility. Immediately take the individual to a doctor.

PHYSICAL CONDITIONING AND HEART ATTACKS

Physical conditioning is the greatest single factor that will assist the body in combating cold weather injuries. Well-built bones and well-toned muscles along with good coordination will prevent slips, falls, sprains and fractures inherent to cold weather and snow. A proper diet will aid the heat-generating properties of the body.

Every winter numerous individuals die of heart attacks by engaging in strenuous activities like shoveling snow. This unaccustomed labor puts sudden stress on the body's circulation system plus the exposure to cold weather raises the blood pressure that could lead to a heart attack. Be careful not to overexert yourself during the winter months.

INDIVIDUAL PHYSICAL FITNESS is an excellent deterrent for combating cold injuries and/or illness. Physically fit individuals have a warmer than average body temperature which:

- Increases their tolerance to frostbite.
- Permits skin heat loss without perspiration.
- Increases digital dexterity.

WINTER WEAPONS SAFETY

Sure, cold weather affects people but what does it do to that M-16 you are carrying? Extreme cold weather can cause weapon malfunctions and breakage.

Snow is a big reason for malfunctions. Snow can get into the working parts, sights, and even the barrel of a weapon. So when you are moving through snow-covered woods or digging a foxhole in the snow, take care of your weapon. Keep your weapon out of the snow and always check it for snow clogs before you fire.

Breakage can result when a weapon is warmed up too quickly in a cold environment. Extreme cold makes tempered steel brittle. Rapid firing of the weapon can further weaken the tempered steel by heating the barrel and receiver to sudden temperatures up to 750 degrees.

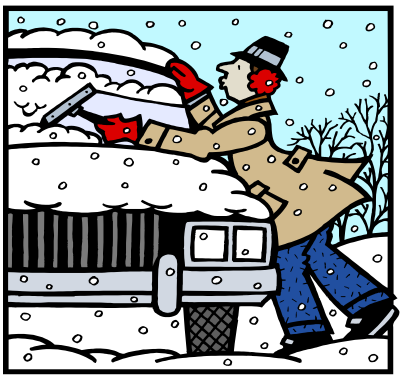
Cold weapons should first be fired at a slow rate of fire. Once the weapon's parts have warmed up, the rate of fire may be increased to normal speed.

A sweating weapon can also cause problems. Condensation forms on a weapon that is taken from extreme cold into heated shelter. When the weapon is taken back outside, the sweat freezes on and in the weapon. This can cause malfunctions and even breakage.

Don't take a sweaty weapon into the cold weather – get rid of the sweat completely, even if it means disassembling the weapon and re-oiling it after cleaning.

There are other types of weapons problems that are caused by cold weather operations. For more information, check FM 31-70, "Basic Cold Weather Manual." it could save you from having serious problems during winter operations.

VEHICLE PREPARATION FOR WINTER



Whether driving a privately owned vehicle (POV) or a Government motor vehicle (GMV), the first important step to consider in winter driving is vehicle preparation. Without proper preparation, you may find yourself stranded and in a life-threatening situation. Use the checklist below to prepare your POV for the long cold winter months. If driving a GMV, follow the maintenance checklist provided by the motor pool for the military-unique vehicle.

- CHECK the radiator hoses for leaks, cracks, and ensure clamps are tight. Replace cracked or brittle hoses.
- CHECK the antifreeze level to ensure you are protected for temperatures of at least -30 degrees Fahrenheit.
- CHECK the headlights, taillights, parking lights, and turn signals. Also check interior lights, such as map and dome lights. Ensure headlights are properly aligned. Adding extra weight to the trunk to increase traction may affect the alignment of the headlights.
- CHECK the battery to ensure proper fluid level, connections are tighten, cables and cable ends are not corroded. If the engine turns over slowly, have the battery checked for serviceability by a qualified mechanic.
- CHECK/CHANGE the oil and the oil filter as required. Use oil weight recommended for the appropriate weather climate.
- CHECK the tires for adequate tread, correct inflation, and ensure that all tires are the same size and type. Mixing tires with different tread patterns, internal construction, and size degrades the stability of the vehicle and should be avoided.
- CHECK the heater and the defroster to ensure they are in proper working condition.
- CHECK the wiper blades for good shape; those designed for winter are recommended to help prevent wipers from icing up.
- CHECK the windshield washers to ensure washer motor is working and the nozzles are properly aligned.

- CHECK the exhaust system for leaks. Any evidence of fumes may indicate carbon monoxide is present. Replace faulty exhaust or tighten it to stop any leaks.

- CHECK the engine thermostat to ensure it is working properly.

- CHECK the radio as it can be used to receive information on road conditions and travel advisories. If your car is not equipped with a radio, carry a portable radio in your car.

- TUNE UP your car for the winter months to aid you in starting your car easier. Extreme cold temperature will make it harder to start your car, thus wearing down your battery.

- SURVIVAL ITEMS are important. These are some items you may want to keep handy in your vehicle:

SHOVEL, FLASHLIGHT, TOOL KIT, TRACTION MATS, TOW CHAIN or STRAP, TIRE CHAINS, FLARES (road type), DRY SAND in sealed container, SLEEPING BAG/BLANKET, ICE SCRAPER and BRUSH, FIRST AID KIT, HIGH ENERGY FOOD/WATER, CANDLE and MATCHES.

Periodically re-check your vehicle to ensure it is properly maintained. Have a qualified mechanics complete work that may be beyond your capabilities. You may have to depend on your car for survival, so be prepared.

WINTER DRIVING SAFETY

Defensive driving under any condition means operating in a manner that will prevent not only you, but also other drivers and pedestrians from having an accident/collision. Winter conditions add an extra degree of difficulty requiring sharp skills, knowledge and alertness.

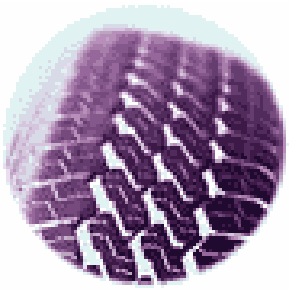
Following are tips for the safe, defensive winter driver:

- **Plan for more time to get where you are going**. The time it takes to get from one place to another between summer and winter will double. Not only do you need to slow down because it is slippery, other things such as visibility, snowplows, sanders, and traffic flow all have an affect. Don't allow yourself to be in a position to hurry during winter weather conditions--it doesn't pay!

If you have to drive during a military mission, you should ask yourself these questions prior to getting on the road: Has a risk assessment been completed? Are you trained/qualified in winter driving techniques? Can your military mission be accomplished safely in the required time frame with the proper training and instruction provided prior to the mission?

- **See and be seen**. Visibility is a must - keep the windows, headlights, taillights and turn signals clear of ice and snow. Clean your windows thoroughly so that ice and snow don't create blind spots. A film also tends to build up on the inside of your windows (particularly for smokers). This kind of film can distort your vision. Clean the windows inside at least once every two or three weeks.

Falling snow has the same affect as fog; therefore, be sure to use your low beams at night and high beams during the day, this will help others to see you. In addition to keeping your tail lights and turn signals cleared, be sure they work.



Traction in the winter months is a must. You will need to replace your summer tires with all season or snow tires. Tires marked "M + S" – or "mud and snow" tires, also known as "all-season" tires, continue to provide safe all-weather performance, but may not always be suitable for severe snow conditions. If you intend to drive in severe winter conditions, **install four snow tires** on your vehicle that meet the new "snow tire" designation. Snow tires will assist you to control your vehicle safely in slippery conditions.

If you choose not to put snow tires on all four wheels, be sure to put them on your drive/power wheels. If your car is front-wheel drive, put the snow tires on the front and vise versa for rear-wheel drive.

If you get stuck, your recovery procedure is to get the car rocking. Never get your wheels spinning -- you'll dig a deeper hole. Rock the car by shifting it from drive and reverse while gently press down on the accelerator. If you are unable to free your vehicle with this method, you will need to use a shovel and some sand that you stored in your trunk for such an emergency.

- **Braking and skidding require special techniques**. On ice, your ability to feel the point in which your wheels will begin to lock is minimal. The best method of braking on snow and ice is the "pumping" method. You should apply the brakes and release them. This is done quickly and repeatedly until you come to a stop. It is better to pump your brakes four, five, or six times as needed than to slam on your brakes causing the "wheel to lock" resulting in a skid. Should you find yourself in a skid, take the following steps:

REAR-WHEEL DRIVE. Don't panic! You must remain calm and under control.

- Slowly remove your foot from the gas pedal.
- Pump the brakes with light touches.
- Keep the car in gear (the engine compression helps to reduce speed).
- Turn the wheels into the skid (the direction the rear end is moving).
- Steer gently and if a counter skid occurs repeat the process.
- Lastly, straighten your wheels and roll a short distance before pressing down on the accelerator.

FRONT-WHEEL DRIVE. Again don't panic!

- Keep your foot on the accelerator (do not decelerate).
- Turn the wheels into the skid.
- Do not touch the brakes and steer gently.

The reason we don't decelerate with front wheel drive is to keep the rear end from overtaking the front wheels, causing a spin out. One last note, whether your vehicle is front or rear-wheel driven and you have a standard or manual transmission, do not down shift your gears because it causes the wheels to slide rather than roll.

Winter driving does call for an extra margin of caution, skills, and alertness. Be sure your vehicle is properly maintained and that you carry the emergency equipment for cold weather. Remember that traction is a key point, and adjust your speed and following distance to allow you to maintain full control of your vehicle.

CARBON MONOXIDE

Carbon monoxide (CO) poisoning is a "silent killer." It occurs more frequently in winter months, when people spend more time in a closed environment, such as their homes, cabins, tents, autos, communications vans, crew areas of tanks, maintenance shops, etc. The most common sources of CO in Korea are engine exhausts, heating stoves, and defective ondol heating systems fired by yontan (charcoal briquettes).

The first symptom of carbon monoxide poisoning is usually a tightness across the forehead, followed by a headache and pounding of the heart. A positive sign of progressive monoxide poisoning is when the person's face becomes extremely red. Weariness, dizziness, and mental changes may also occur.

TREATMENT The following is recommended for persons with carbon monoxide poisoning:

- Remove the person away from the contaminated area into fresh air and loosen their clothing.
- Give artificial respiration or CPR, as appropriate.
- If oxygen is available, give it to the person by using a facemask.
- Seek medical attention immediately.
- Keep victim resting.

If the victim was severely exposed to carbon monoxide, symptoms may occur days, or even weeks later, even if the person at first appears to have fully recovered. Delayed symptoms include visual defects, dizziness, profound changes in emotions and will power, as well as mental changes.

PREVENTION. You can safeguard yourself against carbon monoxide poisoning by making sure of the following:

- Never sit in a vehicle for long periods with the engine running and windows closed.
- Never sleep in or near vehicles with the engine running.
- Never operate engines in a closed garage without exhaust ventilation.
- Check to be sure there are no leaks in your vehicle exhaust system.
- Avoid the use of unvented heaters and charcoal grills in closed areas.
- Avoid lodging in a room or house heated by charcoal. If in doubt as to the heating system, open a window for ventilation.
- Make sure heaters are set at the proper combustion ratio and the heating system is leak free.

If you become stranded, you should remain in your vehicle. Periodically running the engine/heater will help to keep you warm. However, when doing this, open the windows slightly and ensure the vehicle exhaust is not blocked (i.e., with snow). Only run the engine as long as it is necessary to keep warm.

Installation commanders and residents working together can prevent carbon monoxide poisoning from happening in living quarters. Commanders should provide qualified preventive maintenance personnel to routinely inspect quarters for serious health hazards. Inspection is especially critical when quarters have been vacated and are awaiting new families. Commanders can also provide programs that will teach residents how to identify and correct minor problems and report more serious problems, including potential safety hazards, to the installation safety office.

GENERAL WINTER SAFETY HAZARDS

ICE

Expect icy conditions any time the outside air temperature reaches 40 degrees F or lower. Although water freezes at 32 degrees F, road surface can freeze when the air temperature drops to 40 degrees or less. An important place to watch for this condition is on bridges. Bridge surfaces are exposed to the wind and cool off faster than the rest of the road. You should also prepare for icy conditions on roads through shaded areas where a cold wind can freeze a wet road surface.

WHITE ICE

Snow that has been compacted during the day and has slightly melted will freeze at night. Usually this white ice can be seen on the road. When traveling on white ice, drive very slowly. If you cannot find a place to park until conditions improve, install tire chains for better traction.

BLACK ICE

Black ice, clear water that has frozen on black pavement, usually forms below overpasses, on bridges, in areas that are surrounded by landscape or on a source of water running across pavement. Black ice commonly occurs in low, shaded areas

and/or when the road surface starts to freeze at night. You usually cannot see or feel this ice until the vehicle is already on it. You may not expect a patch of ice because you've been driving on dry, clear pavement. It may be an area where melting snow or a roadside spring caused water to run onto the road and freeze. If you are not aware that the water has frozen, you could lose control and the vehicle could skid.

BLIZZARDS. Severe weather conditions distinguished by low temperature, strong winds, and large amounts of snow. The U.S. Weather Service defines a blizzard as a 'storm with winds over 32 mph and enough snow (falling or blowing) to limit your visibility to 500 feet or less.' A severe blizzard has winds over 45 mph, visibility near zero, and temperatures of 10 degrees Fahrenheit or less.

These storms are always hazardous, whether you are walking or driving, and you should avoid venturing outside unless it is absolutely necessary.

SNOW BLINDNESS. A painful condition of the eyes caused by the reflection of the sun's ultraviolet rays on snow or ice. It can occur even when the sun's rays are partially hidden by a light mist or fog. A person blinded while alone is mostly helpless, and can easily freeze or starve to death.

Symptoms include redness of the eyes and a gritty feeling, which progresses to pain and an inability to tolerate any kind of light. The pain has been compared to rubbing sandpaper across one's eyes.

If your sunglasses are lost or broken, you can make a substitute for them. Cut a thin 1" long slits through a piece of cardboard, which is about 6" long and 3" wide. You can use strips of cloth or cord to hold the “cardboard sunglasses” in front of your eyes.

SHOVELING SNOW. Do not overload your shovel with snow, and do not shovel snow from an awkward position. Stop for a few moments if you start to overheat or become out of breath. The risk of heart attack will greatly increase, so pace yourself and don't exceed your limits.

Go inside and warm up if you are cold. You will find shoveling easier if you start in one spot and work your way to the end. Allow plenty of time before shoveling snow from your driveway so as not to over exert or expose yourself.

If you must shovel snow from a roof, use a lifeline and have a safety observer present.

SNOW BLOWERS. Be alert when in the vicinity of a operating snow blower. Avoid the discharge chute or walking in front of the auger. If you operate a blower, attend a class first to learn proper operation. Never clean out the chute while the machine is running. If you are buying one for the first time, have the sales representative explain the machine thoroughly. Never let your children get near a running machine.

WALKING. People who are careful should not fall while walking, but they do. They forget to walk carefully or they hurry on icy sidewalks, streets, or snow covered building entrances, and down they go. We can use common sense about how we walk and the footwear we use. Short steps and picking your path are the best aids on ice. Use footwear with soles made for winter.

AVOID DRY SKIN. Dry skin becomes a problem during the winter. Although it may feel invigorating to take a long, hot bath every day, it may be better to cut down on the frequency. The longer you soak, the more you dry out your skin. Hot water is the worst offender to dry skin. If you take baths, put bath oil in the water. If you take long hot showers, smooth bath oil on your skin with a wet washcloth before drying off.

WINTERTIME JOGGERS Bundle up against the cold weather, however, too much protection can be a hazard to your health. Covering your ears will protect them and reduces the amount of outside sound heard. Remain constantly alert, and uncover at least part of your ears when the weather permits. Alter your jogging route to areas with little or no vehicle traffic.

WINTER RECREATION HAZARDS

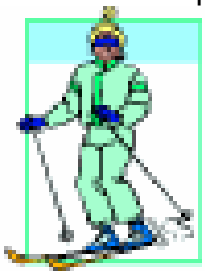
Winter brings winter sports, activities, and recreation. All are to be enjoyed and experienced, and all have hazards associated with them. Some of these hazards are hidden. Familiarize yourself with each activity and its hazards before you undertake it. Talk to people knowledgeable in those areas, go to the library or contact your local Safety Office. Think Safety First.

First and Foremost: Always dress properly for the activity at hand and the weather conditions. Dress in layers that can be removed, as you and the day get warmer.

Sledding is one of the most common past times, especially for youngsters. For their protection NEVER allow them to sled on roadways. A sled is fast moving, low to the ground, and hard to see. This makes it difficult for vehicles to spot them and usually does not provide adequate time to stop.

Ice-skating is another popular sport. Apart from the bruised knees, elbows, and other parts of the body, it can also be very dangerous. Avoid skating on ponds, streams, and rivers. Fast moving currents, natural springs, and air pockets, etc., can make ice very treacherous. Look for ice rinks established by the Morale Support Division or your local community.

Ice fishing may be a new twist for the avid sports person. Ensure you are dressed properly, and check with local anglers and sport shops as the ice conditions and safe areas to fish.



Skiing is a major industry and attracts thousands of people each year. There are many unnecessarily injuries as well. If you plan

to ski, seek qualified instruction, maintain your equipment, and ensure the equipment is properly adjusted for you.

Recognize your limitations. If you are tired or cold - stop, rest, or warm your body up for a while. Tired skiers are accidents waiting to happen. Obey all trail signs and beware of frostbite. Wear tinted goggles to combat the bright reflection of the sun. Use skiing courtesy and ski with a companion or on a supervised slope.

Cross-country skiing and snowshoeing provide an excellent form of exercise as well as recreation. Make sure you are ready for it; take short trips at first. Never go alone**,** and let someone that's not in your party know your route, destination, and estimated time of arrival. Take along first aid supplies, emergency food and survival items on longer trips.

Snowball fights and snow forts are particularly common in early winter months. They are usually the first activity children will get actively involved with. Do not allow them to build their forts near roads. Suggest a snow wall instead of a tunnel, which could collapse and suffocate them. Warn children not to throw ice balls or snowballs at cars, buses, or other people. Parents must supervise their children activities to ensure these rules are followed.

Snowmobiling is a fast growing sport in Korea. Each year, more and more snowmobiles are out on the trails. This increases the potential for accidents. Familiarize yourself with your machine, adhere to the safety tips in the operating manual, and wear a helmet at all times. Most of all, wear appropriate clothing and obey the laws and regulations applicable to snowmobiles.

SNOW AND ICE REMOVAL

Slips and falls on icy walkways account for a large percentage of personnel injuries during the fall and winter months. Many snow and ice removal accidents/injuries result in serious head, spinal and fracture injuries. The best prevention for these accidents/injuries is the prompt removal of snow/ice before it becomes a hazard.

Prior to the arrival of the winter season all units should prepare for snow/ice removal tasks by ensuring the following minimum supplies are available.

• Broom (upright) Snow Shovel Sand/Salt

Snow/ice should be removed from high traffic areas such as outside stairs and entrance/exit ways to include all fire exits. When snow/ice cannot be removed, sand should be used to increase traction. **The following guidelines should also be followed**:

- Remind personnel to be extra cautious when taking their first step outside. The majority of falls occur when people make the transition from firm indoor footing to unexpectedly slick outdoor conditions.
- Avoid marching troops over slick/icy roads and walkways.
- During the hours of darkness avoid short cuts; walk on main roads facing traffic. Use the sidewalk and other illuminated areas when possible.
- Ensure you have firm footing on ladders and platforms before climbing. Use caution when mounting or working on tracked vehicles.
- Clean up water accumulation, which has a tendency to collect inside building entrances as the result of snow/ice deposits from footwear.

LEADER'S RESPONSIBILITIES

Commanders/leaders must teach their personnel how to protect themselves against cold weather injuries. Use safety meetings and pre-exercise briefings to stress certain precautions on how to avoid injuries to troops. First-line supervisors must realize it is their responsibility to:

- Make sure all everyone have necessary cold weather gear and that it is in good condition.
- Train all personnel in the early recognition of cold weather induced injuries.
- Watch your people for early signs and symptoms of cold weather injuries.
- Rotate units and personnel according to the degree of exposure to cold weather.
- Ensure all personnel wear proper clothing.
- Establish an effective clothing resupply program.
- Establish procedures to ensure appropriate sizing and fitting of clothing and footgear are in place.
- Ensure adequate meals, water, and, if possible, warm soups are available to all troops.
- Teach personnel the necessity for personal hygiene and first aid. Troops should review the First Aid manual.

INDIVIDUAL RESPONSIBILITIES

Individual troops also have certain responsibilities to prevent cold weather injuries. All personnel should comply with the following:

- Keep your body, especially your feet, clean and dry. Changing your socks and massaging your feet at least twice a day will prevent most foot injuries. Also keep glove inserts dry to protect your hands.
- Wear only one pair of socks and glove inserts at a time. Wearing more can make boots and gloves fit too tightly and 'restrict circulation.
- Avoid long periods of extreme activity and inactivity. Sweating causes reduction in insulation and can lead to dehydration. Inactivity results in less body heat, and if heat is lost faster than it is generated, injury can result.
- Keep your clothes clean and dry. Dampness reduces the insulation qualities of clothing and increases heat loss.

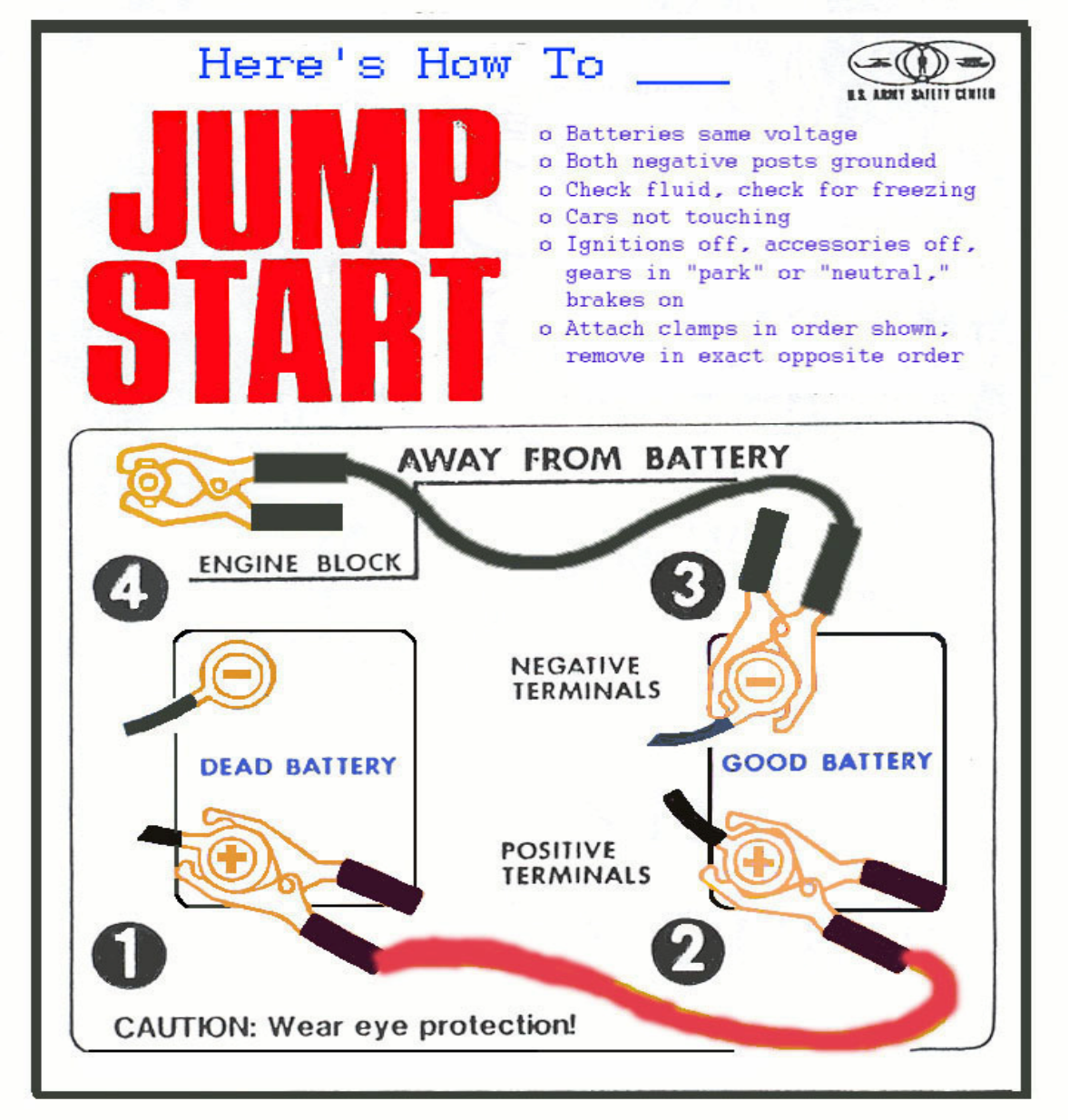
- Avoid wearing tight clothing. It can reduce insulation and blood circulation.
- Remove your boots before getting into a sleeping bag. This is particularly important if socks are wet.
- Stay with a broken-down vehicle to avoid traveling on your feet unless adequately dressed for cold weather.
- Avoid using bare hands to handle anything cold. Avoid letting bare skin touch: cold metal, snow, or other objects that hold and transfer cold.
- Eat hot foods and drink warm liquids. Troops need to drink a lot of water even if they are not thirsty because the body loses great amounts of water in cold weather.
- Report circulation problems and past cold weather injuries to immediate supervisors. Blood circulation problems can make a person highly susceptible to frostbite. Individuals who have suffered cold weather induced injuries in the past have a better than average chance of recurring injuries.
- Avoid alcohol consumption in a cold environment. Individuals who have been drinking lose body heat faster and, therefore, will freeze sooner.
- Use the buddy system. Members of squads and patrols should watch each other for signs of cold weather injury and take necessary actions. For example, if sudden blanching of the skin is noted promptly, immediate care will usually prevent the development of a more serious cold weather induced injury.
- Avoid smoking in a cold environment. Nicotine causes narrowing of the blood vessels, which may further decrease the blood supply to body tissues susceptible to cold weather injuries.
- Avoid self-medication. Certain medicines increase susceptibility to cold weather injuries. These medications can adversely affect your mental alertness, circulation, and/or level of hydration. Cold weather operations dictate that troops must go on sick call for medical problem.

Successful prevention of cold weather injuries requires vigorous command leadership and proper use of preventive measures that are taught, inspected, and enforced. Planning, cold weather training and the provision of proper clothing and equipment are paramount. Well-trained and disciplined personnel suffer fewer cold weather injuries.

COLD WEATHER INJURIES CAN AND MUST BE PREVENTED. IT'S A COMMAND RESPONSIBILITY!

SAFE JUMP STARTING

A wrong hookup can cause the battery to blow up and shower a person with acid and bits of battery. That's an obvious sign you did something wrong. But other things can happen that aren't so noisy -- like a burned-up alternator or blown fuses in the electrical system.
Avoid this by jump-starting your battery the safe and easy way. Hooking up jumper cables is as easy as 1-2-3-4. Keep in mind that the red cable hooks up to the positive (+) posts and the black cable go to the negative (-) ones. See below for easy steps:



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